Appendix II
Waste Extraction Test (WET) Procedures

(a) The Waste Extraction Test (WET) described in this appendix shall be used to determine the amount of extractable substance in a waste or other material as set forth in section 66261.24(a)(2).

(b) Except as provided in subdivision (d) of this appendix, the WET shall be carried out if the total concentration in the waste, or other material, of any substance listed in section 66261.24(a)(2) equals or exceeds the STLC value, but does not exceed the TTLC value, given for that substance. The total concentrations of substances listed in section 66261.24(a)(2) shall be determined by analysis of samples of wastes, or other materials, which have been prepared, or meet the conditions, for analysis as set forth in subdivisions (c) and (d) of this appendix. Methods used for analysis for total concentrations of substances listed in section 66261.24(a)(2) shall be those given in the following documents or alternate methods that have been approved by the Department pursuant to section 66260.21:

(1) for metal elements and their compounds, the waste shall be digested according to the indicated methods described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 2nd edition, U.S. Environmental Protection Agency, 1982 (incorporated by reference, see section 66260.11):

(A) all listed metal elements and their compounds, except hexavalent chromium: Method 3050;

(B) hexavalent chromium: Method 3060;

(2) for all substances listed in section 66261.24(a)(2), except organic lead compounds, the methods and references in which the methods can be found are listed in Appendix III, Table 4 of this chapter;

(3) the method used for analysis of organic lead compounds is given in Appendix XI of this chapter.

(c) Samples shall be prepared for analysis for total and extractable content of substances listed in section 66261.24(a)(2)(A) and for extractable content of substances listed in section 66261.24(a)(2)(B) as follows:

(1) Type i: if the waste or other material is a millable solid, the sample shall be passed directly, or shall be milled to pass, through a No. 10 (two millimeter) standard sieve before it is analyzed. If the sample contains non-friable solid particles which do not pass directly through a No. 10 sieve and which are extraneous and irrelevant as hazardous constituents to the waste or other material, they shall be removed to the extent feasible by mechanical means and discarded. Solids which remain in the waste or other material after removal of the aforesaid extraneous particles shall be milled to pass through a No. 10 sieve and shall then be combined and mixed well with the solids which passed through the sieve without milling. The reconstituted sample shall then be analyzed as prescribed in this appendix;

(2) Type ii: if the waste or other material is a filterable mixture of liquid and solids in which the solids constitute five-tenths (0.5) percent by weight or greater of the sample, the liquid and solids shall be separated by filtration through a 0.45 micron membrane filter. The filtrate so obtained is to be designated as Initial Filtrate. Its volume is determined, and it is retained. The separated solids shall be sieved in a No. 10 sieve and any nonfriable extraneous particles of the kinds described in subdivision (c)(1) of this appendix which do not pass through the sieve shall be removed to the extent feasible by mechanical means and discarded. The solids which remain after removal of the extraneous particles shall be milled to pass through a No. 10 sieve and shall be recombined with solids which passed through the sieve without milling. This recombined solid material shall be extracted following the procedure in subdivision (g) of this appendix. A ratio of 10 milliliters of extraction solution per gram of solid shall be utilized with appropriate modifications for extraction vessel size. After completion of solids extraction, the filtered extractant is combined with Initial Filtrate, mixed thoroughly and analyzed as described in subdivision (g)(3) of this appendix;

(3) Type iii: if the waste or other material is a nonfilterable and nonmillable sludge, slurry, or oily, tarry or resinous material, it shall be analyzed as received unless it contains non-friable extraneous and irrelevant solid particles of the kinds described in subdivision (c)(l) of this appendix. If it contains such solid particles and they are of such size as not to pass through a No. 10 sieve, they shall be removed to the extent feasible by mechanical means and discarded. The remainder of the sample shall be analyzed as prescribed in this appendix;

(4) if it is necessary to dry a solid sample or the solids fraction of a sample before sieving, milling or removal of extraneous solids, or if a sample is dried prior to analysis, all weight losses due to drying shall be determined, and these losses and the conditions of drying shall be reported.

(d) Samples shall be prepared for analysis for total content of substances listed in section 66261.24(a)(2)(B) as follows:

(1) type i: if the waste or other material is a millable solid, the sample shall be passed directly, or shall be milled to pass, through a one-millimeter standard sieve before it is analyzed. If the sample contains non-friable solid particles which do not pass directly through a one-millimeter sieve and which are extraneous and irrelevant as hazardous constituents to the waste or other material, they shall be removed to the extent feasible by mechanical means and discarded. Solids which remain in the waste or other material after removal of the aforesaid extraneous particles shall be milled to pass through a one-millimeter sieve and shall then be combined and mixed well with the solids which passed through the sieve without milling. The reconstituted sample shall then be analyzed as prescribed in this appendix;

(2) type ii: if the waste or other material is a filterable mixture of liquid and solids in which the solids constitute five-tenths (0.5) percent by weight or greater of the sample, the liquid and solids shall be separated by filtration through a 0.45 micron membrane filter. The filtrate so obtained is to be designated as Initial Filtrate. Its volume is determined, and it is retained. The separated solids shall be sieved in a one-millimeter sieve and any nonfriable extraneous particles of the kinds described in subdivision (d)(1) of this appendix which do not pass through the sieve shall be removed to the extent feasible by mechanical means and discarded. The solids which remain after removal of the extraneous particles shall be milled to pass through a one-millimeter sieve and shall be recombined

with solids which passed through the sieve without milling. This recombined solid material shall be extracted following the procedure in subdivision (g) of this appendix. A ratio of 10 milliliters of extraction solution per gram of solid shall be utilized with appropriate modifications for extraction vessel size. After completion of solids extraction, the filtered extractant is combined with Initial Filtrate, mixed thoroughly and analyzed as described in subdivision (9)(3) of this appendix;

(3) type iii: if the waste or other material is a nonfilterable and nonmillable sludge, slurry, or oily, tarry or resinous material, it shall be analyzed as received unless it contains non-friable extraneous and irrelevant solid particles of the kinds described in subdivision (d)(1) of this appendix. If it contains such solid particles and they are of such size as not to pass through a one-millimeter sieve, they shall be removed to the extent feasible by mechanical means and discarded. The remainder of the sample shall be analyzed as prescribed in this appendix;

(4) if it is necessary to dry a solid sample or the solids fraction of a sample before sieving, milling or removal of extraneous solids, or if a sample is dried prior to analysis, all weight losses due to drying shall be determined, and these losses and the conditions of drying shall be reported.

(e) If the waste or other material is a liquid containing less than five-tenths (0.5) percent by weight of undissolved solids, it shall not be subject to the WET procedure, but shall be analyzed directly for the substances listed in section 66261.24(a)(2). The waste shall be classified as a hazardous waste if the total concentration in the waste of any substances listed in section 66261.24(a)(2) exceeds the TTLC value given for that substance. If, however, the total concentration is less than the TTLC but exceeds the STLC when expressed on a milligrams per liter basis, the waste or other material shall be filtered through a 0.45 micron membrane filter, the solids discarded and the filtrate shall be analyzed directly for the substances listed in section 66261.24(a)(2). The waste shall be classified as a hazardous waste if the concentration in the filtrate of any of the substances listed in section 66261.24 (a)(2) exceeds the STLC value given for that substance.

(f) The WET extraction solution shall consist of 0.2 M sodium citrate at pH 5.0 + 0.1, which is prepared by titrating an appropriate amount of analytical grade citric acid in deionized water with 4.0 N NaOH, except that the extraction solution for the determination of chromium (VI) shall consist of deionized water.

(g) The extraction procedure shall be as follows:

(1) fifty grams of sample, or less if it is a type ii sample prepared pursuant to subdivision (c)(2) or (d)(2) of this appendix, obtained pursuant to subdivision (c), (d), or (e) of this appendix shall be placed in a clean polyethylene or glass container designated the Treatment, capable of physically withstanding the extraction procedure and which was rinsed previously with, in succession, an aqueous 1:1 ratio by volume nitric acid solution and deionized water. If the extract will be analyzed for any of the organic substances listed in section 66261.24(a)(2), a glass container shall be used. Furthermore, a container of the same size, shape and material shall be used for an extraction designated as the Blank, which shall be carried through the same procedure as the Treatment, but without addition of the sample;

(2) five hundred milliliters of extraction solution, or less if the waste sample is a type ii sample prepared pursuant to subdivision (c)(2) or (d)(2) of this appendix, shall be added to the Treatment and Blank containers, which shall be then fitted with covered air scrubbers extended well into the extraction solutions and flushed vigorously with nitrogen gas for 15 minutes so as to remove and exclude atmospheric oxygen from the extraction medium. If the sample is to be analyzed for any volatile substance, such as trichloroethylene, the sample shall be added after deaeration with nitrogen to avoid volatilization loss. After deaeration the containers shall be quickly sealed with tightly fitting caps and agitated, using a table shaker, an overhead stirrer or a rotary extractor, operated at a speed which shall maintain the sample in a state of vigorously agitated suspension. Required equipment is described in test method 1310 in “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” SW-846, 3rd edition, U.S. Environmental Protection Agency, 1986 (incorporated by reference, see section 66260.11). The temperature during the extraction shall be maintained between 20 and 40 degrees centigrade. After 48 hours of extracting, the contents of the Treatment and Blank containers shall be either filtered directly or centrifuged and then filtered. Filtering shall be through a medium porosity prefilter and then through a 0.45 micron membrane filter, using a clean, thick-walled suction flask. For coarser solids, prefiltration shall not be necessary. Pressure filtration shall be an optional alternative to vacuum filtration. If the extracts are first centrifuged, glass or polyethylene bottles shall be used as prescribed for extraction. For very fine solids, centrifuging at as high as 10,000 X G may be necessary. After centrifugation, the liquids shall be decanted, prefiltered if necessary, and then passed through a 0.45 micron membrane filter. All filters shall be of low and identified extractable heavy metals, fluoride and organic chemicals content;

(3) if the filtered extracts are to be analyzed only for the metal elements listed in section 66261.24(a)(2)(A), the filtered extracts from the Treatment and Blank shall be transferred to clean polyethylene bottles and acidified with nitric acid to five percent by volume acid content soon after each extract is filtered. For those wastes or waste materials classified under subdivision (c)(2) or (d)(2) of this appendix, the Treatment shall be the Initial Filtrate combined with the extract generated by the WET extraction of the initially separated solids. Similarly the Blank in this instance shall be the filtrate generated by the WET Blank accompanying the initially separated solids, to which is subsequently added a volume of deionized water equivalent to that of the Initial Filtrate. These procedures shall be followed prior to acidification of Treatment and Blank solutions with nitric acid to five percent (by volume) acid content. The bottle shall then be stored at room temperature or frozen. If the extracts are also to be analyzed for the organic substances listed in section 66261.24(a)(2)(B), or for the organic substances only, the filtered extracts shall be transferred to clean glass bottles. If the extracts are to be analyzed for fluoride, they shall be transferred to clean polyethylene bottles. These extracts, containing organic substances or flouride, shall not be acidified, but shall be frozen soon after each extract is obtained and held frozen until the day of analysis, unless the extracts are analyzed within 24 hours.

(h) Sample analysis and data treatment shall be as follows:

(1) each of the filtered extracts from the Treatment and Blank extractions shall have been acidified to five percent by volume nitric acid, and stored at room temperature or frozen in polyethylene bottles or kept frozen without addition of acid in glass bottles until the day of analysis, as prescribed. Each of the extracts shall be thoroughly mixed just prior to being individually analyzed for the substances listed in section 66261.24(a)(2) in order to determine whether the extractable concentration (EC) in the waste or other material exceeds the STLC for any of the substances listed. The extracts shall be analyzed according to the procedures identified in subdivisions (b)(2) and (b)(3) of this appendix;

(2) the net EC of a substance in the Treatment sample which is listed in section 66261.24(a)(2) shall be calculated and reported as milligrams per liter of sample (mg/l). This value is derived after subtracting the concentration of the substance in the appropriate Blank extract from that concentration determined in the Treatment extract.

NOTE: Authority cited: Sections 208 and 25141, Health and Safety Code. Reference: Section 25141, Health and Safety Code.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

